Indian

AMERICAN MOPED ASSOCIATES

DEALER SERVICE MANUAL

INDIAN FOUR STROKE MOPED
MODEL AMI-50

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TABLE OF CONTENTS

	PAGE
Moped Specifications	1
Assembly Instructions	2
Pre-Delivery Instructions	7
Tune Up/Check Up	9
Recommended Service Intervals	10
Carburetor	11
Flywheel	14
Ignition	15
Decompression Shaft	16
Valve Adjustment	17
Cylinder Head	18
Cylinder	19
Piston Rings	20
Engine Removal	21
Cam Removal/Timing	22
Oil Pump	23
Valve Lifters	23
Separating Engine Case Halves	24
Main Transmission Shaft	25
Pedal Shaft	26
Crank Shaft	28
Rear Wheel	29
Wiring Diagram	30
Electrical System	31
Generating System/Battery Charging	33
Turn Signals	34
Brake Lights	35

MOPED SPECIFICATIONS

ENGINE: 4-stroke, 4-cycle, overhead valve, air cooled

ENGINE CAPACITY: 49 cc (2.99 cu. in.), 40 mm bore x 39 mm stroke

CARBURETOR: 10 mm with built-in choke

ELECTRICAL: Flywheel Magneto, 6V 38 Watt with rectifier in system.
Spark plugs: Champion Z12
Bosch U175T1
Prestolite 10E4

HORSE POWER RATING: 1.2 - 1.9 horse power adjusted to meet state regulations

TRANSMISSION: 1 speed automatic with chain drive, quick release pedal drive

GEARING: 3 different sprockets included with each INDIAN Moped for complying with various state speed limitations

FRAME: Pressed steel, monocoque, covered by a lifetime warranty

GAS TANK CAPACITY: 1.4 gallons

OIL CAPACITY: 24 ounces

BRAKES: Internal expanding, twin shoe front and rear, operated by hand levers

SUSPENSION: Hydraulic shocks front and rear, heavy duty

TIRES: 2.25 x 17 nylon cord 4-ply rating with 300 lb. load rating front and rear at 30 m.p.h. (INDIAN brand made by Cheng Shin).
Front 40 lbs., Rear 40 lbs.

WHEELS: Heavy duty 12 gauge spokes and aluminum alloy hubs

WEIGHT: 120 lbs.

DIMENSIONS: Handlebar width 26 3/4 inches

OVERALL LENGTH: 69 inches, wheelbase 43¼ inches, seat height 31 inches

ROCKER ARM ADJUSTMENT: .002 - .003

CONTACT BREAKER POINTS: .012 - .016

SPARK PLUG GAP: .024 - .028

TORQUE FOR HEAD BOLTS AND VALVE COVER: 75 in. lbs.

TORQUE FOR CLUTCH NUT: 160 in. lbs.

INDIAN FOUR ASSEMBLY INSTRUCTIONS

--- NOTICE ---

THE MATERIAL PRESENTED WITHIN THIS MANUAL ASSUMES THE READER HAS A FUNDAMENTAL KNOWLEDGE OF MECHANICAL PROCEDURES AND A WORKING KNOWLEDGE OF MOPEDS. ANY ATTEMPTS TO ASSEMBLE OR REPAIR MODELS DESCRIBED HEREIN WITHOUT SUCH KNOWLEDGE, AND THE REQUIRED SPECIAL TOOLS AND PARTS, MAY RESULT IN AN UNSAFELY PREPARED MACHINE. AMERICAN MOPED ASSOCIATES ASSUMES NO LIABILITY FOR SUCH AN OCCURRENCE.

This manual is based on units in production at the time of publication shown below. However, the Company reserves the right to make changes to models, procedures, and specifications at any time without prior notice.

American Moped Associates requires that, without exception, all retail customers receive mopeds that have been properly assembled and prepared for sale.

CARTON INSPECTION

1. Upon receipt of unit, immediately check bill of lading against information posted on end of shipping carton. If a discrepancy is found, make a note on the bill of lading. Inspect unit in carton.

   NOTE: If a discrepancy is noted, check Manufacturer's Statement of Origin or Invoice. If MSO is in error, please advise Traffic Department immediately.

2. Inspect carton for signs of damage. If damage is found, make note of same on shipper's bill of lading. DO NOT REMOVE MACHINE FROM CARTON IF SHIPPING DAMAGE IS NOTED.

3. If shipping damage is noted, immediately contact shipper advising him of receipt of damaged merchandise. Follow his procedure for claim.

4. If shipping carton is undamaged, sign shipper's bill of lading and open the carton as outlined below.

5. Frame serial number is located on plate attached to steering head.

6. Engine serial number is stamped on lower left hand side of engine while sitting on moped.

UNCRATING

1. CAUTION: Do not use sharp cutting tools to open top of box. Open top flap first. Remove fender, engine covers, and accessory parts box.

2. With top of box open, cut end of box where front forks are located, (a case cutter or linoleum knife makes a good tool) being careful not to cut tire or fork. Cut cord tying wheel to frame. Remove brake assembly from wheel. Wheel may now be removed from box. Have a small box or stand capable of fitting under engine. By pulling at top of front forks entire unit may now be slid out of end of carton. Place engine on box or stand so that front forks are high enough off floor to mount front wheel and fender.

3. Now open accessory box which should contain:

   1 set of pedals - marked R and L
   1 mirror
   1 axle with lock nut and 2 washers
   1 speedo assembly
   1 set front directional lights
   1 set fender bolts
   1 carb return spring
   2 cable ends

   Optional for those units shipped without headlight bulbs:

   3 bulb retaining clips

4. Remove all protective packing from gas tank, handle bars, and rear shocks. Packing on rear directional lights should be left on at this time to prevent rear fender from being scratched.

FRONT WHEEL ASSEMBLY

1. Remove four bolts (14mm) and lock washers from fork legs and install front fender, but do not tighten bolts yet.

2. Insert front brake assembly into front wheel. Front brake cable should be routed in front of fork to prevent binding. Now insert front axle with one washer through the lower fender brace first, then through the fork to your left viewed while you are sitting in front of moped. This fork leg can be identified by a small tab

welded to it which fits into a slot on the brake backing plate. Tap axle lightly with a plastic or rubber mallet until the tip just starts to show through the other side of the hub. Now place speedo drive unit in position making sure two tabs in drive unit match two slots in wheel hub. Now tap axle all the way through the other fork and fender brace. Install washer and lock nut (19mm) and tighten. While tightening axle nut hold speedo drive assembly so that cable will run 10-15 degrees higher than horizontal to prevent binding. Check wheel for free running after tightening axle nut.

3. Front fender bolts may now be fully tightened. As front fender also acts as fork brace, fender bolts must be well tightened.

HANDLEBARS

1. Remove four bolts (12mm) holding handlebar clamps. Please note these bolts are all same size, same length. Insert handlebar wiring harness through hole in handlebar mounting plate. Now place handlebars in position, replace top clamps and bolts and screw in hand tight. Adjust angle of handlebars to suit and tighten. Unit may now be removed from box or stand, and set on center stand.

SPEEDOMETER INSTALLATION

1. Before installing speedometer, tip moped toward rear and spin front wheel. Observe speedo cable at top end, if it turns you can proceed. If it does not, check installation on speedo drive at rear hub.

2. Before installing speedometer on moped, check by installing speedo cable into speedometer and rotating front wheel forward. Speedo needle should move slightly. If OK remove cable and proceed.

3. Remove nut (10mm), washers, and first rubber bushing from speedo housing. Place speedo on mount and install rubber bushing with tapered side up. Install flat washer, lock washer and nut. Do not overtighten as rubber bushings acts as a shock absorber, and will not function if they are compressed too much.

FRONT DIRECTIONAL LIGHTS

1. To install front directional lights, first remove headlight housing bolts (17mm).

2. While sitting on moped, right hand light assembly has an orange wire, and left hand assembly has a light blue wire.

3. As headlight housing has a threaded lug, do not remove nuts (14mm)

from shaft on directional lights. This nut is used for locking shaft in position from outside. Retain bolts removed from headlight housing for use in future if directional lights are removed.

4. Match and connect all wires in headlight housing.

DECOMPRESSION CABLE

1. Install decompression cable making sure cable is well routed without sharp kinks. It should be routed through plastic cover under gas tank.
2. It is not ordinarily necessary to remove cable stop to install cable on decompression arm.
3. Simply push arm toward rear of engine and slip cable into position.
4. Cable is adjusted by loosening cable stop and moving cable in or out as necessary.
5. The function of the decompression lever is to open the exhaust valve to allow easier pedalling during starting procedure. It does not actuate clutch assembly.

BATTERY

1. Battery must be removed from moped for servicing and charging.
2. Battery caps are not threaded and are easily removed with a needle-nose plier.
3. Fill battery with battery acid to a level between upper and lower lines. Additional acid may have to be added after charging as plates will soad up some acid.
4. Use a trickle charger of not more than 0.5 AMPS (½ AMP) charging rate. These can be obtained from motorcycle accessory or motorcycle shops. Do not use automotive type chargers, as they will damage battery. Battery caps must be removed during charging. As the fumes from the battery are explosive the area should be well ventilated. Smoking or open flames should be avoided.
5. Charging time will vary, but normally 1½ to 2 hours should be sufficient.
6. After battery is reinstalled in moped, make sure battery vent tube is routed below moped, between swing arm swivel bolt and swing arm cross bar. After initial charging, use distilled water to maintain fluid level.

PEDAL ASSEMBLY

1. Install pedal assemblies using 15mm wrench noting right and left hand threads marked at end of shaft. Left hand thread installs counterclockwise, right hand thread installs clockwise.

REAR SHOCKS

1. Install lower rear shock cap bolt using 17mm wrench.

REAR DIRECTIONAL LIGHTS

1. Remove wrapping from rear directional lights and place a shop rag over rear fender to prevent scratching.
2. Lock nut will be found on connector wire behind tail light housing.
3. Insert shaft through mounting hole and thread nut on shaft. Do not twist directional light shaft to install while holding nut as wire will twist and break.

PREDELIVERY PROCEDURE

Assuming all the previous instructions have been carried out, it is recommended that the following procedure should be followed before delivery of a moped to a customer.

1. Remove oil drain plug and drain any residual oil there may be in engine. Lack of oil in new engine is no cause for concern. Replace oil drain plug carefully and tighten, making sure washer is used. Fill crank case to cross-hatch marks on dip-stick while dip-stick is unscrewed and resting on oil filler hole. Any good quality 30 weight or multi-viscosity detergent oil may be used. Crank case holds slightly less than one quart.

2. With fuel petcock in off position add approximately one gallon of gasoline to tank. Now remove fuel petcock bowl. Clean out any sediment in bottom of bowl. Test petcock at on and reserve positions, using a small can or glass to catch fuel.

3. Test horn, directional lights, directional light indicator bulbs. These items function without engine running as long as battery is installed.

4. Check front brake, rear brake, decompression lever.

5. Check all cables, mechanical and electrical for proper routing, and possible binding.

6. Check wheel spokes for tightness, a good method being to rotate front and rear wheel while holding a wooden pencil so that it strikes the spokes. A loose spoke can be detected by a change in the sound as the pencil strikes the spoke. Loose spokes should be tightened carefully, as over tightening one side of wheel can cause rim curvature.

7. Check chain adjustment while moped is off center stand, and an average weight rider is sitting on seat. There should be 3/4 of an inch play both ways on chain tested at center point between front and rear sprocket. Check rear axle nut for tightness. Chain adjuster lock nuts should be checked for tightness after rear axle nut has been tightened. Lubricate rear chain with chain lube.

8. Engine is now ready to be started and tuned. With moped on center stand, ignition switch off, and petcock off, with decompression lever pulled in, sit on moped and turn pedals approximately 10-12 times. This will allow oil to circulate through engine before starting. Now turn

petcock to on, ignition switch to on, choke to on (down position), and pull decompression lever in. Pedal three or four revolutions and release decompression lever. Engine should now start. Pull up choke to horizontal position and warm engine before attempting to tune. By placing the palm of your hand gently on the aluminum valve cover you can tell whether the engine is warm. Upper needle on carburetor is fuel mixture screw, and lower needle is idle speed setting. Turning fuel mixture screw in will lean out low speed mixture, and turning screw out will richen low speed mixture. One and one half turns out is a good starting point for adjustment. Care should be taken when turning fuel mixture screw in as far as it can go, as needle tip is very fragile and easily broken. Idle speed adjustment should be done with engine warm, and rear brake lever held in. Final tuning should be done on road test and adjustments should not be more than 1/8 turn at a time. Check throttle cable for full open, and full close positions. Please note that choke lever has two positions, full choke and partial choke. After engine is started choke lever should be in horizontal position. While engine is running check headlight, taillight, and stoplight. Also check ignition switch to make sure engine shuts off.

9. Inner tube valve stems should be checked to make sure that locking nut is reasonably tight. Loose stems may cause tube to rotate in tire on hard braking, especially on rear wheel. Tire pressure should be 40-45 PSI front and rear.

TUNE UP/CHECK UP

1. Adjust front and rear brakes.
2. Check chain for proper tension.
3. Clean air filter
4. Check steering head for proper adjustment.
5. Visual check of cables and electrical routing.
6. Adjust carburetor and throttle control.
7. Check start lever for proper operation.
8. Clean or replace spark plug.
9. Visually check all lights for proper operation.
10. Check battery level. Add distilled water if necessary.
11. Tighten axle bolts and nuts.
12. Lock-tite seat catch knob and engine release knob.
13. Change or add engine oil.
14. Check engine timing and correct if necessary.
15. Check wheel alignment.
16. Check spokes for proper tightness.
17. Adjust valves, intake and exhaust.
18. Road test.

RECOMMENDED SERVICE INTERVALS

MILES

	300	600	1000	1500	2000	2500	3000	3500	4000
CHANGE ENGINE OIL	X		X		X		X		X
CHECK OIL LEVEL	X	X	X	X		X		X	
ADJUST START CABLE		X		X	X		X		X
ADJUST BRAKES		X	X		X		X		X
CLEAN AIR FILTER			X				X		
ADJUST VALVES				X				X	
ADJUST DRIVE CHAIN	X			X		X		X	
LUBE CHAIN & CABLES			X		X		X		X
CLEAN SPARK PLUG		X	X		X		X		X
CHECK BATTERY LEVEL		X		X		X		X	
CHECK TIRE PRESSURE	X		X	X	X	X	X	X	X
CHECK LIGHTING SYSTEM	X	X	X	X	X	X	X	X	X

Carburetor Adjustment

Tillotson HK Series

In order to simplify carburetor adjustment, the following steps should be followed:

1. Remove the idle adjusting screw and spring (bottom screw silver in color).

2. Using wire cutters, snip off approximately one and one half (1-½) coils from the tension spring. Re-install the idle screw and spring.

3. Fuel air mxiture screw should be turned out (counterclockwise) from fully closed position one and a half turns.

   With the engine warm and running at a fast idle:

4. Slowly turn in (clockwise) the fuel air mixture screw when turning the mixture screw in, the engine will increase in R.P.M.

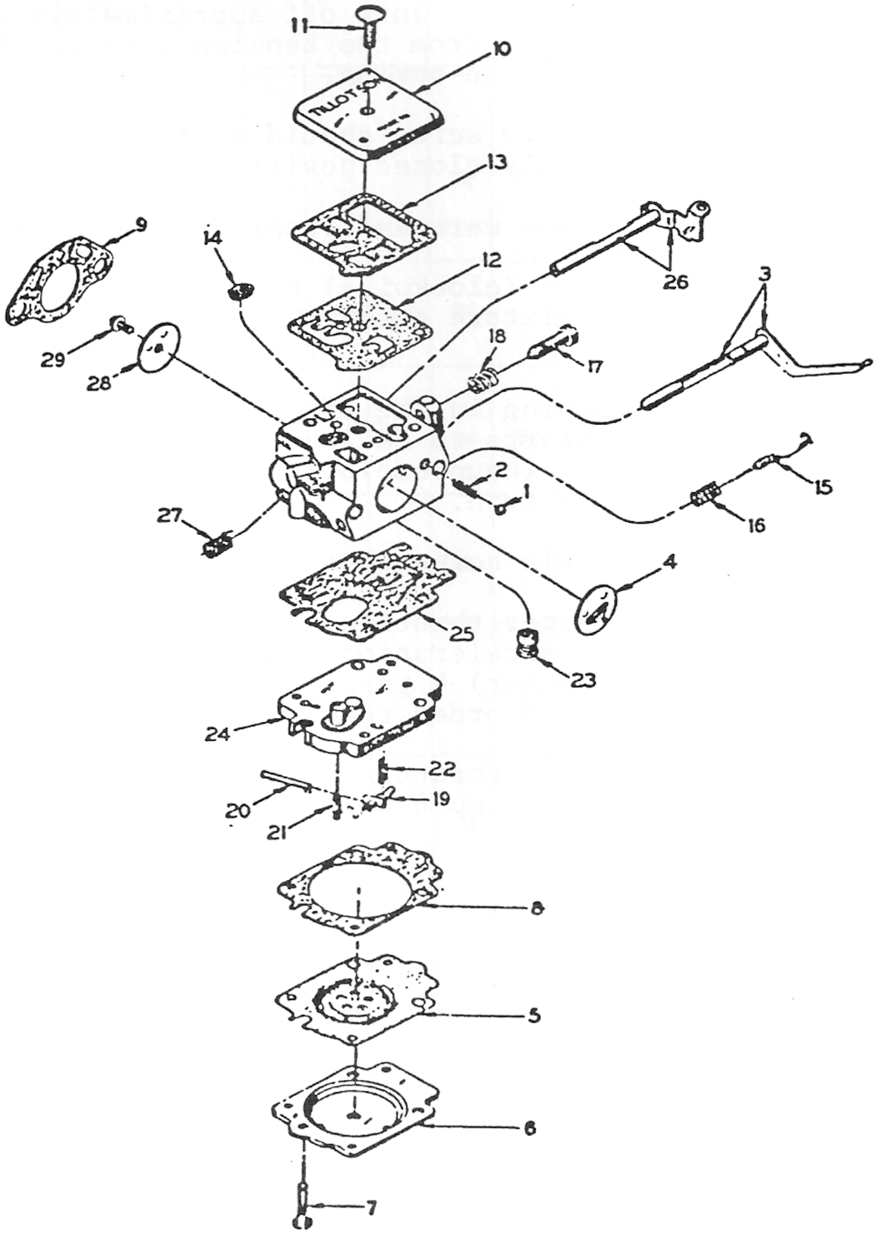
   A. Keep turning in the mixture screw until the engine R.P.M. starts to fall off (Lean out) At this point, turn back (counterclockwise) the mixture screw approximately ½ turn.

5. Adjust the idle screw until the desired idle is obtained.

6. Check for proper throttle response. If the engine falters during rapid acceleration turn the mixture screw counterclockwise (richer) ½ turn. The idle speed will have to be increased in order to compensate for the richer mixture.

7. Check again for throttle response. If the engine still falters repeat step 6 until satisfactory response is obtained.

TILLOTSON CARBURETOR MODEL: HK-25A



No.	Part No.	Part Name
1	206-121	Choke Friction Ball
2	24-B281	Choke Friction Spring
3	26-1217	Choke Shaft & Lever
4	27-352	Choke Shutter
5	237-606	Diaphragm
6	91-A332	Diaphragm Cover
7	15-B371	Diaphragm Cover Retaining Screw
8	16-B273	Diaphragm Gasket
9	Supplied by AMA	Flange Gasket
10	91-845	Fuel Pump Cover
11	15-B370	Fuel Pump Cover Retaining Screw
12	not used	Fuel Pump Diaphragm
13	16-B272	Fuel Pump Gasket
14	95-197	Fuel Pump Screen
15	43-A74	Idle Mixture Screw
16	24-B331	Idle Mixture Screw Spring
17	15-B381	Idle Speed Screw
18	24-B247	Idle Speed Screw Spring
19	12-B292	Inlet Control Lever
20	32-83	Inlet Fulcrum Pin
21	34-210	Inlet Needle
22	24-B393	Inlet Spring
23	363-558	Main Nozzle
24	198-317	Metering Module Body
25	16-B295	Metering Module Gasket
26	13-1924	Throttle Shaft & Lever
27	24-B429	Throttle Shaft Return Spring
28	14-460	Throttle Shutter
29	15-B312	Throttls Shutter Reatining Screw

RK-17HK	Regular Kit
GS-3HK	Gasket Set
DG-1HK	Diaphragm & Gasket Set

FLYWHEEL REMOVAL/INSTALLATION

REMOVAL

1. Remove the 10 mm nut securing the flywheel to the crank shaft. Use tool number Z313-07-50 to prevent the flywheel from turning.

2. Remove the flywheel with Flywheel Puller, part z223-07-50. Screw the outer body of the puller into the flywheel until it stops.

   A. Hold the outer body stationary with a wrench and tighten the center bolt until the flywheel pulls free.

INSTALLATION

1. Before installing the flywheel, check that the crankshaft key is in place and that there are no loose parts in the magneto assembly.

2. Check that the flywheel is free of metal particles which may have been picked up by the flywheel magnets.

3. Slide the flywheel onto the crankshaft and align the flywheel keyway with the crankshaft key. Slide the flywheel into place and torque the securing nut to 25 foot pounds.

IGNITION TIMING

Remove: spark plug
engine side covers
magneto cover
sealed beam

Disconnect: Dark blue wire inside head lamp.

1. A. Rotate flywheel counter-clockwise (arrow stamped on flywheel shows direction).

   B. Continue rotating the flywheel until the letter 'F' (fire) (stamped on flywheel) aligns with the hole* on the top-side of the engine case.

2. Connect one lead of the tester (OHM meter, buzzer, etc.) to a good ground on the bike and the other lead to the female connector of the dark blue wire inside the head lamp.

3. Turn the flywheel slowly in the normal direction of rotation (counter-clockwise) until the points open. (OHM meter should show a lower resistance and the buzzer type will decrease in sound.)

4. At this stage, the points should be open and the 'F' on the flywheel aligned with the hole on the engine case.

5. If the points do not open at the proper time and the correct point gap of .012 - .016 thousandths has been checked, then:

   A. Loosen the three screws securing the base plate and rotate it slightly. Counter-clockwise to retard, and clockwise to advance the timing. Tighten the three screws and recheck the timing. Repeat this step until the points open at the proper time.

NOTE: Some mopeds have the hole in the engine case plus a chisel mark located closeby. In that case, use the chisel mark for timing.

DECOMPRESSION SHAFT

REMOVAL/INSTALLATION

REMOVAL

Disconnect: Decompression cable

Remove: Center and lower valve cover bolts

1. After having removed the valve cover, remove the circlip holding the decompression shaft in place. (The circlip is located on the inside fo the valve cover.)
2. The shaft should now pull out. Be careful not to damage the O-ring on the shaft.

INSTALLATION

1. If the decompression shaft O-ring is scarred or damaged, replace it. This O-ring seals the rocker arm oil from being forced out of the shaft.
2. Slide the tension spring onto the shaft.
3. Slip the O-ring over the shaft and set it into the groove cut in the shaft.
4. Lubricate the shaft with a light oil and insert it into the valve cover.
5. Install circlip.

VALVE ADJUSTMENT

1. Disconnect decompression cable.

2. Remove: valve cover
   magneto cover
   spark plug

3. Rotate the flywheel counter-clockwise (arrow stamped on flywheel shows direction) until the intake valve starts to open.

   A. With the intake valve starting to open, continue rotating the flywheel until the 'T' (stamped on flywheel) aligns with the hole on top of the crank case.

   NOTE: Some mopeds will have the hole in the crankcase plus a chisel mark located closeby. In that case, use the chisel mark for timing.

   B. This indicates top dead center on compression stroke.

4. Adjust the valves by loosening the locknut and turning the inner adjusting nut. Recheck after tightening locknuts.

5. Valves are set between .002 and .003 when engine is cold.

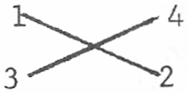
CYLINDER HEAD REMOVAL/INSTALLATION

1. Disconnect: decompression cable
   spark plug connector
   throttle cable
   fuel line

2. Remove: valve cover
   exhaust pipe
   carburetor

3. Remove the four bolts which secure the cylinder head.

NOTE: To prevent warping, loosen the four bolts in sequence.



4. The cylinder head may now be removed along with the two push rods.

5. To reinstall cylinder head use the following procedure:

   A. Place cylinder head over cylinder using a new gasket.

   B. Install the four bolts and tighten gradually using the pattern shown above, making at least three passes. Torque setting is 75 inch lbs.

   C. Rocker arm adjusting bolts should be loose, but do not have to be removed to install push rods.

   D. After push rods are installed, rocker arms can be be slipped over end of push rod. Rocker arms should now be adjusted to .002 - .003 cold. Always recheck gap after tightening lock nuts, and readjust if necessary.

CYLINDER REMOVAL/INSTALLATION

1. Remove: decompression cable
   valve cover
   exhaust pipe
   cylinder head
2. Remove the two bolts located at the bottom sides of the cylinder.
3. Gently pull the cylinder away from the engine.

INSTALLATION

1. Lubricate the cylinder barrel with a light oil.
2. Gently slide the barrel over the piston. It may be necessary to rock the cylinder slightly.

NOTE: There is no necessity for ring compressors as cylinder has a slight chamfer at the lower end of the barrel. The piston rings will automatically compress as they enter the cylinder.

PISTON/RINGS REMOVAL/INSTALLATION

1. No special tools are required for piston removal. The piston pin is of the free floating type. It need only be pushed out with hand pressure.
2. Remove: Piston circlips
   Piston Pin

INSTALLATION

1. Lubricate piston and piston pin.
2. Arrow stamped on piston crown must point down.
3. Push in piston pin.
4. Install piston pin circlips.

RINGS

NOTE: Three types of rings are used for the piston:

1. Bottom ring - oil ring
2. Second ring - second compression ring
3. Top ring - first compression ring (chrome)

NOYE: All rings are stamped with the letter 'T' or 'STD'. The stamped side must face out towards the cylinder head. Ring gaps shouldbe staggered 90° from each other. The number stamped on the piston crown must correspond with the cylinder number. Cylinder number is located at the base of the cylinder.

ENGINE REMOVAL

1. Remove: left and right plastic side covers
   air cleaner
   drive chain
   exhaust pipe
   pedal cranks

2. Disconnect: throttle cable
   spark plug connector
   decompression cable
   fuel line

3. A. Using a #14mm end wrench and socket, remove the three engine mounting bolts starting with the bolt nearest the carburetor.

   B. Next, remove the bolt located behind the air cleaner.

   C. Loosen, but do not remove, the third bolt (located near the center stand) and allow the engine to drop down.

   D. Disconnect the three magneto wires.

   E. Remove the third engine bolt. Engine may now be removed from the frame.

Install engine by reversing the above procedure.

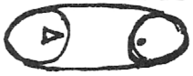
CAM REMOVAL

1. Remove valve cover
2. Loosen rocker arms to remove push rods.
3. Remove: push rods
   exhaust pipe
   clutch side cover
   clutch and drum assembly
   cam tensioner
   cam stop
4. Gently lift the cam, chain and timing sprocket out as one assembly. The cam and related assembly should lift out with little or no difficulty.

CAM TIMING

To insure proper timing, these instructions must be carefully followed.

1. Slip the cam chain around the cam and timing sprocket.
2. The arrow stamped on the cam must face towards the punch mark on the timing sprocket.



3. Slip the timing sprocket over the crankshaft while at the same time allowing the cam to drop into place.
4. The timing sprocket keyway must then be fitted over the crank shaft pin.
5. Rotate the cam until the oil pump shaft engages into the cam slot. (Bottom of cam.)

OIL PUMP REMOVAL/INSTALLATION

1. After separating the engine case halves, remove the two phillipd head screws and set plates which secure the oil pump in place.
2. Remove the set plate bush 17.5 mm.
3. Lift out the 6 mm washer covering the oil pump rotor. The use of a magnet makes this procedure very simple, but a small piece of wire, such as a paper clip, will work.
4. Grasp the oil shaft with needle nose pliers and gently pull up. The oil pump shaft and inner rotor will come out as a complete assembly.

INSTALLATION

1. Slip the inner rotor over the oil pump shaft.
2. Set assembly into place.
3. Gently install the outer oil pump over the inner oil pump rotor.
4. Make sure the outer pump rotor is in place.
5. Drop in the 6 mm washer.
6. Fit the set plate bush in and gently push in place.

VALVE LIFTERS

The valve lifters are easily removed or replaced by using the following steps.

1. Disconnect the decompression cable and remove the valve cover.
2. Disconnect the fuel line and throttle cable.
3. Remove the four bolts which secure the cylinder head to the cylinder.
4. Remove the two bolts holding the cylinder. Gently pull the cylinder away from the piston.
5. Use a magnet to reach in and pull out the lifter. Both lifters may be removed or replaced using this method.

NOTE: The only other method used for removal or replacement of valve lifters entails the complete disassembly of the engine.

SEPARATING ENGINE CASE HALVES

Remove; valve cover
exhaust pipe
cylinder head
push rods
cylinder
piston
pedal cranks
clutch side covers
clutch and drum assembly
engine sprocket
cam tensioner
cam stop
magneto rotor

1. Remove the remaining four phillips head screws holding the engine case halves together.

2. Place the engine case tool over the crankshaft and use two of the clutch cover screws for securing the tool.

3. Tighten the center bolt on the case tool in order to break the seal. Do not overtighten. With a soft mallet, tap the case halves until free. Case should now separate.

MAIN TRANSMISSION SHAFT

REMOVAL/INSTALLATION

REMOVAL

1. Follow disassembly procedures listed under 'separating case halves'.

2. Once the case halves have been separated, the main transmission shaft may be removed. There is no need to disassemble the engine any further.

CAUTION: There is a 15 mm washer which the main transmission shaft fits against. In order not to lose this part, it should be removed by using a magnet, and set to one side.

INSTALLATION

1. Place the 15 mm washer into the hole provided for the main transmission shaft.

2. Place the main transmission shaft into its respective position.

PEDAL SHAFT

REMOVAL/INSTALLATION

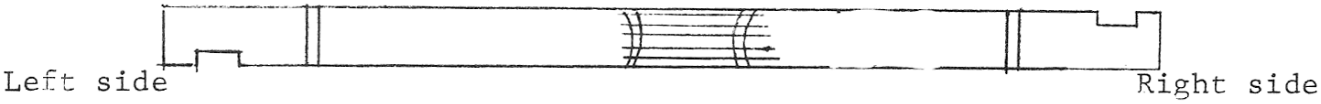
REMOVAL

1. Follow disassembly procedures listed under separating case halves
2. Once the case halves have been separated, the pedal shaft, counter transmission shaft and the pedal chain may be lifted out as one assembly.
3. Remove the pedal shaft chain.
4. Remove the four 20 mm washers and the four 20 mm circlips from the pedal shaft.
5. Slide the starter drive sprocket off the pedal shaft. Be careful not to lose the two ratchet pawls and the two pawl springs.

INSTALLATION

NOTE: As the pedal shaft can be installed wrong, special attention should be paid to the following instructions.

1. Using the diagram below, determine the left and right side of the pedal shaft to be installed.



   A. Left side of the pedal shaft is the longer of the two sides. This is measured from the end of the shaft to center of the teeth.

2. Install the two 20 mm circlips in the grooves cut on the left side of the pedal shaft.
3. Starting on the right side of the pedal shaft, slide the first 20 mm washer on the shaft and up to the circlip on the teeth.
4. Again starting on the right side, slide the starter drive sprocket onto the shaft and up to the 20 mm washer. Raised side of starter drive sprocket must face towards the right side of the pedal shaft.
5. Hold the pedal shaft in an upright position for ease of spring and pawl assembly. Start with the spring and pawl slot closest to you.

6. Place the pawl in the left hand slot, closest to the pedal shaft. The rounded portion of the pawl faces out and the narrowest portion rests against the pedal shaft teeth.

7. Place the rounded portion of the spring in the right hand slot. The straight side of the spring must face out towards the sprocket teeth and the opposite side should rest against the pawl.

8. Turn the sprocket one half turn and repeat steps #6 and #7.

NOTE: Install pawl and springs in the slots which are closest to you. Never start on the far side of the shaft.

9. Slide the second 20 mm washer over the shaft and up against the pawl and springs.

10. Install the 20 mm circlip. This prevents the ratchet assembly from falling out during use.

11. Place the chain around the starter drive sprocket and the counter transmission shaft.

12. Before setting the assembly into postion, make sure that the third 20 mm washer is between the engine case and will come to rest against the circlip on the pedal shaft.

13. Place assembly into position.

14. The fourth 20 mm washer may be installed after the engine halves are assembled. It will set between the clutch case and the outer circlip on the pedal shaft.

CRANKSHAFT

REMOVAL/INSTALLATION

If the crankshaft or the connecting rod needs to be replaced, it must be replaced as a complete assembly.

If overheating, seizure, or wear is apparent, the crankshaft assembly must be replaced.

1. Follow disassembly procedures listed under 'separating case halves' and remove the crankshaft.

REAR WHEEL

REMOVAL/INSTALLATION

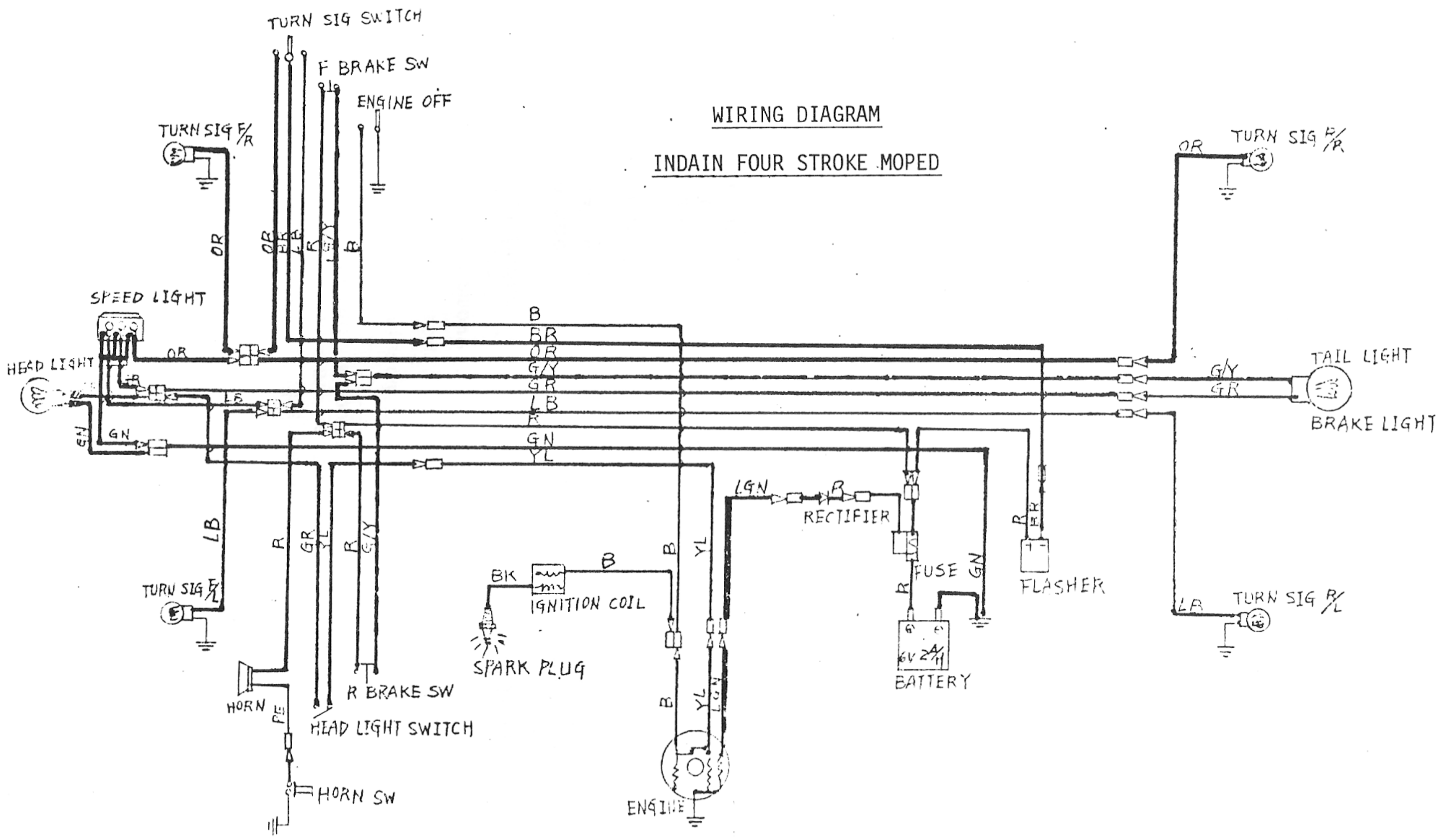
1. Place the moped on the centerstand.
2. Loosen but do not remove the brake adjusting nut.
3. Remove the drive chain by using the masterlink to separate the chain.
4. Loosen and remove the rear axle bolt using #19 wrench.
5. Lean the moped to the left and pull the wheel back.
6. Remove the complete brake assembly together with the cable. The rear wheel is now free and able to be removed.

For installation, reverse the above procedures.

NOTE: Be sure to insert the slot in the brake plate onto the stud on the swing arm. This is necessary for proper brake operation.

WIRING DIAGRAM

INDAIN FOUR STROKE MOPED



B	BLUE	R	RED
BR	BROWN	GN	GREEN
OR	ORANGE	YL	YELLOW
G/Y	GREEN/YELLOW	LGN	LIGHT GREEN
GR	GREY	PE	PURPLE
LB	LIGHT BLUE	BK	BLACK

ELECTRICAL SYSTEM

The following information is useful in locating electrical problems in the shortest amount of time.

With the INDIAN moped, you have basically four systems:

1. Lighting - head lamp, tail light, speedometer lights
2. Generating System - battery charging
3. Ignition System - capacitator, points, high tension coil, spark plug
4. Battery System - brake lights, turn signals, horn

NOTE: The turn signals, horn, and brake lights are run off the battery circuit. If the battery is completely discharged, then the items mentioned will not function.

1. Lighting System - First check the bulbs. This can either be accomplished by replacing it with one that is known to work or use an OHM meter set to RX1 to check for continuity. If an OHM meter is used then the wires connected to the bulb must be disconnected.

   If the lighting system bulbs are good, disconnect the yellow wire inside the headlamp body.

   A. Start the moped and set it for a fast idle.
   B. Use a OHM meter set to 10 volts A.C.
   C. Connect the negative lead (black) to a good ground on the moped.
   D. Connect the positive (red) lead to the female side of the yellow wire.
   E. Depending upon the idle speed, you should obtain a voltage reading of between 2 - 6 volts.

If you are unable to obtain a voltage reading:

1. Remove the two side covers, air filter and two of the engine mounting bolts. The third engine mounting bolt, located above the center stand, need only be loosened. In some cases, the drive chain may have to be removed.

2. Allow the front portion of the engine to pivot down. (The third engine bolt close to the center stand will act as the pivot point.)

3. The three magneto wires are now accessible and may be pulled out from between the engine and frame.

4. Disconnect the yellow wire (all three magneto wires have plug in connectors) and allow the magneto side of the wire to exit between the engine and frame by the magneto. Make sure the blue and green wires are still connected and in place.

5. Bring the engine back to the normal running position and replace the upper front mounting bolt. Be careful not to pinch the magneto wires when positioning the engine.

6. Start the engine and again use the volt OHM meter to measure the voltage from the yellow wire of the magneto. This reading is now being taken directly from the magneto. A voltage reading between 2 - 6 volts at fast idle will show that the magneto is working properly.

7. If there is no voltage reading at the yellow wire from the magneto, then the magneto coils must be replaced.

8. If the proper voltage reading is obtained, then the yellow wire from the head lamp down to the connection of the magneto is either broken or grounding out on the frame.

If a reading of between 2 - 6 volts is obtained from the yellow wire inside the head lamp then the light switch must be checked

1. Reconnect the yellow wire inside the head lamp.

2. Locate the covered harness housing the yellow, grey and purple wires. (Inside the head lamp body.)

3. Disconnect the grey wire and with the moped running at fast idle, read the voltage (2 - 6 volts) from the male side of the grey wire. (Light switch must be on.)

4. If there is no voltage reading, the light switch is at fault.

5. The green wire (slip on connector) on the sealed beam is the wire used to carry voltage to the tail lights.

GENERATING SYSTEM

BATTERY CHARGING

In order to troubleshoot the battery charging system, the following steps should be taken.

1. Remove the right side cover and disconnect the light green wire coming through the rubber grommet in the frame and going to the rectifier.
2. Start the moped and set it at a fast idle.
3. Use a volt OHM meter set to 10 volts A.C. Connect the negative (black) lead to a good ground on the moped. The positive (red) lead should be connected to the light green wire coming through the frame. A voltage reading of between 2 - 6 volts should be obtained. If not, the problem is either the connection between the frame and engine, or else the magneto assembly.

If the proper voltage is obtained:

1. Reset the volt ohm meter to RX1.
2. Disconnect the red wire from the rectifier. (Both the red and green wires at the rectifier must be disconnected at the same time.)
3. Connect one lead from the OHM meter to the green wire on the rectifier and the other lead to the red wire on the rectifier.
4. Make a note of whether you obtained a reading or not.
5. Reverse the OHM meter leads (ie. if you had the red OHM meter lead connected to the green rectifier wire, then you would now use the black OHM meter lead connected to the green rectifier wire.)
6. If the same reading (full continuity or '0' reading) is obtained both ways, then the rectifier is at fault and must be replaced. If a '0' reading is obtained one way and a scale reading is obtained when the leads are reversed, then the rectifier is good and the system is working properly.

NOTE: The green wire (ground wire) from the battery must have metal to metal contact to insure proper battery grounding.

BATTERY SYSTEM

TURN SIGNALS

This system (along with the brake light and horn) should only be checked when the battery is fully charged. Check that the bulbs are not faulty and that all the wire connections are connected. The battery fuse must also be inspected.

1. If the turn signals light up (either left or right turn position) but fail to flash, then the flasher is defective and must be replaced.

2. If the signals fail to light/flash at all, then disconnect the brown and red wire at the flasher unit. Connect the red wire from the rectifier with the brown wire coming out of the engine frame. If the flasher is defective, then the light will come on in the left or right turn position. If the lights do not come on, then read the following procedures.

3. Use a volt OHM meter to check the switch and the switch wiring. Set the volt OHM meter to RX1.

4. Connect the positive (red) lead from the meter to the brown wire going into the frame.

5. Connect the negative lead (black) to a good ground on the moped.

6. Flip the turnsignal switch to the left. The meter should show full continuity.

   A. Now flip the switch to the off position. The meter should now read 'O' continuity (open circuit).

   B. Flip the switch to the right. The meter should show full continuity.

If any of the above tests fail to show the proper reading, or if the meter fails to register at all in any position of the switch, then either the switch is at fault or the brown wire leading to the switch is broken or grounded.

A continuity check on the brown wire may be made by using the meter on RX1 with one lead on the brown wire from the frame and the other to the brown wire on the head lamp.

BATTERY SYSTEM

BRAKE LIGHTS

Before trying to locate faults in the battery system, first make sure that the battery is completely charged and that the battery fuse and related bulbs are not burnt out. Also, check the battery ground (green wire) for proper grounding.

1. Use an OHM meter set to 10 volts D.C.
2. Connect the negative lead (black) to a good ground on the moped.
3. Connect the positive lead (red) to the red wire on the right brake lever switch. A reading of 4 - 6 volts should be obtained. Follow item #3 again for the left brake lever switch.
4. If there is no reading at the switch then check the red wires inside the head lamp for 4 - 6 volts D.C. If there is still no reading of voltage, then the red wire must be traced back to the battery. Either the wire is broken or else it is grounded on the frame.
5. If a 6 volt reading is obtained from the red wire on the brake switches then connect the positive meter lead (red) to the second brake switch wire (green yellow) and apply the brake. If the switch is operational a 4 - 6 volt reading will be obtained. If there is no voltage reading then the switch is at fault.

NOTE: Another easy way to test the brake switches is to disconnect the brake switch wires inside the head lamp (red/green yellow) and test for continuity (RX1) when the brake is applied. This test can only be done on one switch at a time.

6. If the brake switches are found to functioning properly then the problem is either the wire going to the brake light (green yellow) or the connection at the tail light. (A voltage reading may be taken at the red wire from the tail light.)